

Claims

1. A transmit power control method in a radio system supporting a use of coding blocks in communication between a base station and user equipment, the method including receiving coding blocks in at least one base station having a target signal-to-interference ratio (SIR) value, decoding the received coding blocks by the base station, measuring a SIR value, comparing, by the base station, the measured SIR value with the target SIR value of the base station, the method comprising:

determining a quality of a received coding block;

storing samples of differences between a measured SIR value and a target SIR value;

adjusting the target SIR value based on values of the samples of the differences between the measured SIR value and the target SIR value, and the quality of the received coding block; and

providing a transmit power control command based on the adjusted target SIR value to the user equipment.

2. The method of claim 1, the method further comprising adjusting the target SIR value by reducing the target SIR value by a predetermined down step value when decoding of the received coding block succeeds, and a difference of the differences between the measured SIR value and the SIR target value is smaller than a threshold that is defined for the measured SIR value minus the target SIR value for a fraction of time slots.

3. The method of claim 1, the method further comprising adjusting the target SIR value by reducing the target SIR value by a predetermined down step value when decoding of the received coding block succeeds, and a sum of the differences between the measured SIR value and the target SIR value is

smaller than a negative value threshold that is defined for the measured SIR value minus the target SIR value.

4. The method of claim 2, wherein the adjusted target SIR value is greater than or equal to a local minimum target SIR value.

5. The method of claim 1, the method further comprising adjusting the target SIR value by adding a target SIR value up step value to the target SIR value when decoding of the received coding block fails and a difference of the differences between the measured SIR value and the SIR target value is smaller than a threshold that is defined for the measured SIR value minus the target SIR value for a fraction of time slots.

6. The method of claim 1, the method further comprising adjusting the target SIR value by adding a target SIR value up step value when decoding of the received coding block fails and a sum of the differences between the measured SIR value and the target SIR value is smaller than a negative value threshold that is defined for the measured SIR value minus the target SIR value.

7. The method of claim 5, wherein the up step target SIR value comprises a negative, positive or zero value.

8. The method of claim 5, wherein the adjusted target SIR value is greater than or equal to a local minimum target SIR value and smaller than or equal to a local maximum target SIR value.

9. The method of claim 1, the method further comprising adjusting the target SIR value by reducing the target SIR value by a predetermined target SIR down step value of outer loop power control when decoding of the received

coding block succeeds and a difference of the differences between the measured SIR value and the SIR target value is larger than a threshold that is defined for the measured SIR value minus the target SIR value for a fraction of time slots.

10. The method of claim 1, the method further comprising adjusting the target SIR value by reducing the target SIR value by a predetermined target SIR down step value of outer loop power control when decoding of the received coding block succeeds and a sum of the differences between the measured SIR value and the target SIR value is larger than a negative value threshold that is defined for the measured SIR value minus the target SIR value.

11. The method of claim 9, wherein the adjusted target SIR value is greater than or equal to a global minimum target SIR value.

12. The method of claim 1, the method further comprising adjusting the target SIR value by adding a target SIR up step value of outer loop power control to the target SIR value when decoding of the received coding block fails and a difference of the differences between the measured SIR value and the SIR target is larger than a threshold that is defined for the measured SIR value minus the target SIR value for a fraction of time slots.

13. The method of claim 1, the method further comprising adjusting the target SIR value by adding a target SIR up step value of outer loop power control to the target SIR value when decoding of the received coding block fails and a sum of the differences between the measured SIR value and the target SIR value is smaller than a negative value threshold that is defined for the measured SIR value minus the target SIR value.

14. The method of claim 12, wherein the adjusted target SIR value is smaller than or equal to a local maximum target SIR value.

15. A radio having transmit power control, the radio uses coding blocks in communication between a transceiver and a receiver, and uses a target signal-to-interference ratio (SIR) value in transmit power control, the radio including decoding means for decoding a received coding block, measuring a SIR value and comparing means for comparing the measured SIR value with the target SIR value, the radio comprising:

determining means for determining a quality of a received coding block;

storing means for storing samples of differences between a measured SIR value and a target SIR value;

adjusting means for adjusting the target SIR value based on values of the samples of the differences between the measured SIR value and the target SIR value and the quality of the received coding block; and

providing means for providing a transmit power control command based on the adjusted target SIR value.

16. The radio of claim 15, wherein the adjusting means reduce the target SIR value by a predetermined down step value when decoding of the received coding block succeeds and a difference of the differences between the measured SIR value and the SIR target value is smaller than a threshold that is defined for the measured SIR value minus the target SIR value for a fraction of time slots of coding blocks.

17. The radio of claim 15, wherein the adjusting means reduce the target SIR value by a predetermined down step value when decoding of the received coding block succeeds and a sum of the differences between the

measured SIR value and the target SIR value is smaller than a negative value threshold that is defined for the measured SIR value minus the target SIR value.

18. The radio of claim 16, wherein the adjusted target SIR value is greater than or equal to a local minimum target SIR value.

19. The radio of claim 15, wherein the adjusting means add a target SIR value up step value to the target SIR value when decoding of the received coding block fails and a difference of the differences between the measured SIR value and the SIR target value is smaller than a threshold that is defined for the measured SIR value minus the target SIR value for a fraction of time slots of coding blocks.

20. The radio of claim 15, wherein the adjusting means add a target SIR value up step value when decoding of the received coding block fails and a sum of the differences between the measured SIR value and the target SIR value is smaller than a negative value threshold that is defined for the measured SIR value minus the target SIR value.

21. The radio arrangement of claim 19, wherein the target SIR value up step value comprises a negative, positive or zero value.

22. The radio of claim 15, wherein the adjusting means limit the target SIR value to greater than or equal to a local minimum target SIR value and to smaller than or equal to a local maximum target SIR value.

23. The radio of claim 15, wherein the adjusting means reduce the target SIR value by a predetermined target SIR down step value of outer loop power control when decoding of the received coding block succeeds and a

difference of the differences between the measured SIR value and the SIR target value is larger than a threshold that is defined for the measured SIR value minus the target SIR value for a fraction of time slots.

24. The radio of claim 15, wherein the adjusting means reduce the target SIR value by a predetermined target SIR down step of outer loop power control when decoding of the received coding block succeeds and a sum of the differences between the measured SIR value and the target SIR value is larger than a negative value threshold that is defined for the measured SIR value minus the target SIR value.

25. The radio of claim 23, wherein the adjusting means limit the target SIR value to greater than or equal to a global minimum target SIR value.

26. The radio of claim 15, wherein the adjusting means add a target SIR up step value of outer loop power control to the target SIR value when decoding of the received coding block fails and a difference of the differences between the measured SIR value and the SIR target value is larger than a threshold that is defined for the measured SIR value minus the target SIR value for a fraction of time slots.

27. The radio of claim 15, wherein the adjusting means add a target SIR up step value of outer loop power control to the target SIR value when decoding of the received coding block fails and a sum of the differences between the measured SIR value and the target SIR value is smaller than a negative value threshold that is defined for the measured SIR value minus the target SIR value.

28. The radio of claim 26, wherein the adjusting means limit the target SIR value to greater than or equal to a local maximum target SIR value.